IN THE CLAIMS

1. (previously presented) A method of scanning a volume in an MRI system, comprising:

a. creating a B_0 magnetic field;

b. creating a B_0 map for each slice of a scan volume from the B_0 magnetic field, each scan slice having a plurality of positive and negative scan slice pixels;

c. obtaining a first frequency of RF pre-pulses for each scan slice;

d. calculating a median value of the B_0 magnetic field from the B_0 map for each scan slice;

e. calculating percentages of the positive and negative scan slice pixels in each scan slice.

2. (previously presented) A method of imaging a scan volume with an MRI system, comprising:

a. generating a B_0 field map of each scan slice of a scan volume by measuring a B_0 magnetic field over each scan slice of the scan volume, each scan slice having a plurality of positive and negative scan slice pixels;

b. obtaining a first frequency of RF pre-pulses;

c. calculating a median value of the B_0 magnetic field over each scan slice, the calculation being done using the B_0 field maps;

d. calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the B_0 field map for each scan slice, wherein a

positive scan slice pixel is defined as a scan slice pixel with positive value in the B_0 field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the B_0 field map;

    e.   wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

        i.   calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by using the median value of the B_0 magnetic field over the scan slice calculated at step c;

        otherwise:

        ii.   improving shimming of the B_0 magnetic field with a shim protocol; and

        iii.   repeating steps a through e; and

    f.   obtaining an MRI image of each scan slice, wherein the MRI image of a scan slice is obtained using RF pre-pulses at the second frequency for the scan slice.

    3.   (previously presented) The method of claim 2 wherein the step of calculating a second frequency of RF pre-pulses for a scan slice is done by adding the median value of the B_0 magnetic field over the scan slice to the first frequency of RF pre-pulses.

    4.   (previously presented) The method of claim 1 further comprising applying a plurality of RF pre-pulses in order to suppress magnetic resonance signals from hydrogen nuclei in fat molecules present in the scan volume.

5.   (currently amended) The method of claim 1 further comprising applying a plurality of RF pre-pulses ~~are used~~ in order to suppress magnetic resonance signals from hydrogen nuclei in macromolecules present in the scan volume.

6.   (currently amended) The method of claim 1 further comprising applying a plurality of RF pre-pulses ~~are used~~ in order to suppress magnetic resonance signals from hydrogen nuclei in water molecules present in the scan volume.

7.   (previously presented) The method of claim 2 wherein the step of obtaining an MRI image of a scan slice comprises the steps of:

a.   applying

   i.   RF pre-pulses at second frequency for the scan slice; and

   ii.   RF pulses at transmit frequency to the scan slice;

b.   measuring magnetic resonance signals from the scan slice; and

c.   processing the magnetic resonance signals to obtain an MRI image of the scan slice.

8.   (previously presented) A method of imaging a scan volume in an MRI system, comprising:

a.   generating a B_0 field map of each scan slice of a scan volume by measuring a B_0 magnetic field over each scan slice of the scan volume and storing the B_0 field map in a database, each scan slice having a plurality of positive and negative scan slice pixels;

b.   obtaining a first frequency of RF pre-pulses for each scan slice;

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c.   calculating median value of the B_0 magnetic field over each scan slice, the calculation being done using the B_0 field maps stored in the database;

d.   calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the B_0 field map for each scan slice, wherein a positive scan slice pixel is defined as a scan slice pixel with positive value in the B_0 field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the B_0 field map;

e.   wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

        i.   calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by adding the median value of the B_0 magnetic field over the scan slice calculated at step c to the first frequency of RF pre-pulses calculated at step b;

otherwise:

        ii.   improving shimming of the B_0 magnetic field with a shim protocol; and

        iii.   repeating steps a through e;

f.   obtaining an MRI image of each scan slice using RF pre-pulses at second frequency for that scan slice;

g.   storing the MRI image of each scan slice obtained at step f in the database; and

h. displaying the MRI images stored in the database on a display device.

9. (previously presented) The method of claim 8 wherein the RF pre-pulses are used in order to suppress magnetic resonance signals from hydrogen nuclei in fat molecules present in the scan volume.

10. (previously presented) The method of claim 8 wherein the step of obtaining an MRI image of a scan slice comprises the steps of:

a. applying

  i. RF pre-pulses at second frequency for the scan slice; and

  ii. RF pulses at transmit frequency to the scan slice;

b. measuring magnetic resonance signals from the scan slice; and

c. processing the magnetic resonance signals to obtain an MRI image of the scan slice.

11. (currently amended) An MRI system comprising:

a. a polarizing magnet configured to produce a high intensity magnetic field called a B_0 magnetic field;

b. a set of shimming coils configured to improve homogeneity of the B_0 magnetic field;

c. a magnetic field detector configured to measure a B_0 magnetic field distribution from the B_0 magnetic field;

d. a set of gradient coils configured to produce a gradient magnetic field superposed on the B_0 magnetic field;

e.   a transmitter configured to generate RF pulses and RF pre-pulses wherein frequency of RF pre-pulses is specific for each scan slice, each scan slice having a plurality of positive and negative scan slice pixels;

f.   a radio frequency receiver configured to detect magnetic resonance signals;

g.   a processing module comprising:

i.   a module configured to calculate the median ~~of the~~of a B_0 magnetic field distribution map over each scan slice, wherein the B_0 magnetic field distribution map is generated from the B_0 magnetic field distribution;

ii.   a module configured to calculate percentages of the positive and negative scan slice pixels in each scan slice, wherein positive scan slice pixels are defined as scan slice pixels with positive B_0 magnetic field values, and wherein negative scan slice pixels are defined as scan slice pixels with negative B_0 magnetic field values;

iii.   a module configured to calculate a second frequency of RF pre-pulses for each scan slice by adding the median ~~value of a~~value of the B_0 magnetic field distribution map over the scan slice to a first frequency of RF pre-pulses, the first frequency of RF pre-pulses being obtained by a standard procedure; and

iv.   a module configured to process magnetic resonance signals from a scan slice to obtain an MRI image of each scan slice; and

h.   a database comprising:

i.   a storage unit configured to store B_0 field distribution maps;

ii.   a second storage unit configured to store the median value of the B_0 magnetic field distribution map over each scan slice; and

          iii.   a third storage unit configured to store an MRI image of each scan slice.

12.   (previously presented) A computer program product configured for use with a computer, the computer program product comprising a computer usable medium having a computer readable program code embodied therein generating an image using an MRI system, the computer program code performing the steps of:

        a.   generating a B_0 field map of each scan slice of a scan volume by measuring a B_0 magnetic field over each scan slice of the scan volume, each scan slice having a plurality of positive and negative scan slice pixels;

        b.   obtaining a first frequency of RF pre-pulses;

        c.   calculating median value of the B_0 magnetic field over each scan slice, the calculation being done using the B_0 field maps;

        d.   calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the B_0 field map for each scan slice, wherein a positive scan slice pixel is defined as a scan slice pixel with positive value in the B_0 field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the B_0 field map;

        e.   wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

          i.   calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by adding the median value of the B_0 magnetic field over the scan slice to the first frequency of RF pre-pulses;

otherwise:

   ii. improving shimming of the B_0 magnetic field with a shim protocol;
and

   iii. repeating steps a through e; and

 f. obtaining an MRI image of each scan slice, wherein the MRI image of a scan slice is obtained using RF pre-pulses at the second frequency for the scan slice.

 13. (previously presented) A computer program product configured for use with a computer, the computer program product comprising a computer usable medium having a computer readable program code embodied therein acquiring an image using an MRI system, the computer program code performing the steps of:

 a. generating a B_0 field map of each scan slice of a scan volume by measuring a B_0 magnetic field over each scan slice of the scan volume and storing the B_0 map in a database, each scan slice having a plurality of positive and negative scan slice pixels;

 b. obtaining a first frequency of RF pre-pulses for each scan slice;

 c. calculating median value of the B_0 magnetic field over each scan slice, the calculation being done using the B_0 field maps stored in the database;

 d. calculating percentages of the positive and negative scan slice pixels in each scan slice, the calculation being done using the B_0 field map for each scan slice, wherein a positive scan slice pixel is defined as a scan slice pixel with positive value in the B_0 field map, and wherein a negative scan slice pixel is defined as a scan slice pixel with negative value in the B_0 field map;

e.   wherein when the percentage of either the positive scan slice pixels or the negative scan slice pixels in each scan slice is greater than a predefined threshold value, performing the step of:

i.   calculating a second frequency of RF pre-pulses for each scan slice by correcting the first frequency of RF pre-pulses, the correction for a scan slice being done by adding the median value of the B_0 magnetic field over the scan slice to the first frequency of RF pre-pulses;

otherwise:

ii.   improving shimming of the B_0 magnetic field with a shim protocol; and repeating steps a through e;

f.   obtaining an MRI image of each scan slice using RF pre-pulses at second frequency for that scan slice calculated at step e;

g.   storing the MRI image of each scan slice obtained at step f in the database; and

h.   displaying the MRI images stored in the database on a display device.